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ABSTRACT

The relative effectiveness of three plans for implementing group learning centers in home economics classes was compared. Plans varied in assignment of group activities--a student group either completed all activities in a course unit, or completed some, and reported what they had learned to the rest of the class. Participants were 251 eighth and ninth grade students, of which 30 were mildly disabled. A 19-item, objective achievement test was administered as a pretest and as a post test. Student attitudes were assessed by a course evaluation form, and small group discussions were used to obtain teacher attitudes. A two-way analysis of variance showed no significant differences in achievement between the plans; however, significant differences were found in student attitudes toward group work and toward learning center activities and materials. Teachers' attitudes were favorable. Cognitive growth occurred for both average and mildly disabled students in all three plans. (Author/CP)

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ASSESSMENT OF LEARNING CENTERS AS A TEACHING/LEARNING STRATEGY IN MAINSTREAMED CLASSES

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Under the provisions of P.L. 94-142 disabled students are to be educated in regular classrooms as much as is feasible and/or practical (Goodman, 1976). The movement to include physically and/or mentally disabled students in regular classrooms is referred to as mainstreaming or integration.

One factor related to effective mainstreaming is teacher attitude and competence in working with exceptional children. Elam (1974) stated that the lack of qualified specialists and teachers will be the greatest barrier in the integrating effort. Research by Keogh & Levitt (1976) indicated that regular teachers were willing to work with disabled students but felt they lacked the knowledge to plan and implement programs for these students and to help these children in the critical area of social interaction with peers.

The sociometric status of disabled students in regular classrooms has been studied by Johnson and Kirk (1950), Rucker, Howe, and Snider (1969), Goodman, Gottlieb, and Harrison (1972), and Iano, Ayers, Heller, McGettigan, and Walker (1974). Their findings generally indicated that mentally disabled students were accepted less and rejected more than nondisabled students in the classes.

An intervention was found to be a successful method in improving the acceptance of low social status students in special education classes (Chennault, 1967, and Rucker and Vincenzo, 1970). The students did not maintain the gain in social status one month after the intervention.

A model for creating a classroom climate which promotes growth for both mentally disabled and nondisabled students was developed and tested by Beery (1974). Gains in skills, interpersonal relations, and enjoyment were reported for adults and students. Beery suggested the use of any or all of the following: large group, small group, one-to-one and independent learning activities, peer teaching, learning centers, aides, team teaching and inclusion of resource personnel in the classroom. This kind of organization provides for instructional and social as well as temporal integration of mentally disabled students in the regular classroom.

Vacca and Vacca (1976) pointed out the effectiveness of learning centers in meeting the varying needs of individual students within a classroom. Learning centers provide opportunities for students to develop skills in working with others, to learn from other students, to practice making decisions and to practice following directions.

Learning centers can be structured around individual and/or group activities. Peer tutoring, which is likely to occur in group activities or a cooperative goal structure, develops a bond of friendship between the learner and the tutor and helps integrate slow learners into the group (Johnson and Johnson, 1975). A cooperative goal structure may facilitate both cognitive and affective educational outcomes.

Three organizational plans for implementing group learning centers in mainstreamed classes were developed as part of an Iowa Department of Public Instruction and Iowa State University project. The purpose of this study was to compare the relative effectiveness of the three plans. Specific objectives were:

1. to compare cognitive achievement of students in the three plans;
2. to study differences in student attitudes among the three plans;
3. to obtain teachers' reactions toward the use of group learning centers in mainstreamed classes.

Procedures

A teaching module on consumer information was developed for each plan using identical objectives and supporting generalizations. All plans included total class activity to introduce a unit and to summarize and/or form generalizations at the conclusion of a unit.

Each learning center in Plan 1 provided activities for accomplishing a different objective of a unit. As the activities were completed the groups rotated so each group had an opportunity to complete the activities in each learning center.

The activities in each learning center in Plan 2 were directed toward a different generalization associated with the same objective. The groups did not rotate; as the activities were completed the groups reported to the rest of the class what they had learned in their learning centers. In this way all students had an opportunity to conclude all generalizations even though they had not worked on them directly. This process was repeated for each objective in the unit.

Plan 3 combined the organization of Plan 1 and Plan 2. All students worked on selected primary objectives and rotated among learning centers as in Plan 1. For the remaining objectives the students followed the organization of Plan 2.

A variety of activities and materials were provided in each learning center, i.e. tapes, visuals, reading materials, case studies, hands-on objects, activity sheets. Adaptations were made in the activities and materials to meet the educational needs of students with varying abilities.

An integral part of the three learning center plans was the grouping of students. The following criteria were established to guide the teacher dividing a mainstreamed class into learning center groups: three to five students in a group, heterogeneous academic ability, and social compatability.

The population for the study consisted of eighth and ninth grade home economics classes in Iowa in which mildly disabled students were mainstreamed. Of the 60 schools identified, 13 schools including 19 classes met the following criteria for inclusion in the sample: mildly disabled students mainstreamed during second semester, 1977; a minimum of 12 students per class; and a foods or clothing unit to be taught during April, 1977. The 19 classes in the sample were randomly assigned to the three plans. Complete data were obtained from 16 classes taught by 14 teachers. A total of 251 students including 25 mentally disabled and five physically disabled were included in the final sample.

Two instruments were developed to evaluate the use of group learning centers in mainstreamed classes and to compare the relative effectiveness of the three plans. A 19-item objective achievement test was administered as a pretest prior to students working in the learning centers and as a posttest at the completion of the module. Estimated reliability of the achievement test using the Kuder-Richardson formula 20 was .68. The relatively short length of the test and the narrow spread of scores partially explain this lower than desirable reliability. Most of the items on the test were within acceptable levels for difficulty and discrimination. Distractors were functioning effectively for 16 of the 19 items.

Twenty-three items assessing the students' reactions to the materials, the activities, group work, and content area were developed. Additional items specific to each plan were devised. The final instrument for Plan 1 contained 25 items; for Plan 2, 25 items; and for Plan 3, 27 items. The response format was a 5-point Likert-type scale. Teachers read each item aloud and then students circled their response.

Teachers' attitudes toward the learning center strategy and group work were obtained through small group discussions at a workshop conducted at the completion of the module.

The items on the student attitudinal instrument were grouped into clusters using cluster analysis procedures. Means and standard deviations were computed for each cluster. The reliability of each cluster was computed using the Spearman-Brown procedure. Clusters and their corresponding reliabilities are: Cluster 1, difficulty level of materials and activities, r = .80; Cluster 2, kinds of materials and activities, r = .88; Cluster 3, working in groups, r = .77, Cluster 4, content = .70.

To test for differences in achievement and student attitudes between the plans, two way analysis of variance procedures were utilized. Plan and class were used as the sources of variance.

Findings and Discussion

The mean score on the pretest was 11.25 for nondisabled students and 8.32 for disabled students. Posttest mean scores were 13.15 and 9.46 respectively. Differences between pretest scores and posttest scores were calculated for all students. The average difference or gain score was 1.90 for all participating students. A paired t-test was used to determine whether or not the average difference score was statistically significant. The resulting t-value of 13.98 was significant at the .01 level. Although the gain in achievement was not as great for mentally disabled students, it was consistent with their learning rate.

The average difference score was 2.09 for Plan 1, 1.81 for Plan 2, and 1.67 for Plan 3. Analysis of variance procedures were used to test whether statistically significant differences in cognitive achievement occurred between the plans. The resulting F-ratio of .14 indicated no significant differences in level of cognitive achievement were found between the participating classes (F = 1.81). An F of 1.96 was needed for significance at the .05 level. These results suggest that students in Plan 2, who did not work on all generalizations directly, were able to conclude the generalizations from the group reports.

F-ratios resulting from a two-way analysis of variance using plan and class as sources of variance in student attitudes are presented in Table 1. The F-ratios in the left column of the table are the overall F-ratios from the two-way analysis of variance, those in the middle column are the results of plan as a source of variance, and those in the right column are the results of class as a source of variance. The clusters are those discussed earlier: difficulty level of activities and materials, kinds of materials and acitivites, working in groups, and content.

Table 1. F-ratios for plan and class as related to student activities

Cluster	F-ratios		
	Overall	Plan	Class
1-difficulty level of materials and activities	4.28**	21.66**	1.39
2-kinds of materials and activities	2.10*	4.16*	1.76
3-working in groups	1.09	2.81	0.81
4-content	2.20*	3.25*	2.03*

*Significant at < P 0.05.

**Significant at < P 0.01.

To determine if there were differences between plans, the F-ratios for plans were inspected. To further interpret the significant F-ratios the cluster means presented in Table 2 were examined. No attempt was made to interpret the significant F-ratios for class as a source of variance. The primary reason for looking at class was to make sure that significant overall F-ratios were really plan differences and not class differences.

Table 2. Means[a] for cluster measuring student attitudes toward group learning centers

Cluster	Plan 1	Plan 2	Plan 3
1-difficulty level of materials and activities	12.70	15.62	11.61
2-kinds of materials and activities	15.15	17.63	14.54
3-working in groups	15.28	14.49	14.75
4-content	16.76	16.59	15.34

[a]Means could range from 4 to 20 for clusters 1, 3, and 4 and from 5 to 25 for Cluster 2.

Plan was a significant source of variance for Clusters 1, 2, and 4. Students using Plan 2 expressed significantly more favorable attitudes toward learning center materials and activities (Clusters 1 and 2) than students in Plans 1 and 3. Because each learning center in Plan 2 pertained to only part of an objective, the students in Plan 2 completed fewer activities and worked with fewer instructional materials than did the students using Plan 1 and Plan 3. Students in Plan 1 completed all activities related to each objective and students in Plan 3 did so for two of the four objectives. The students using Plans 1 and 3 may have been overwhelmed with the quantity of materials and the number of activities in each learning center. As some of the concepts and activities were overlapping the students may have viewed some of them as repetitious, which could have contributed to the less positive attitudes.

Inspection of Table 1 indicates no significant differences were found in attitudes toward working in groups as measured in Cluster 3, Because mean cluster scores for the three groups ranged from 14.49 to 15.28, it can be concluded that students responded favorably toward group work regardless of the plan they used.

Although mean scores for Cluster 4, attitude toward content, were favorable or very favorable, plan was a significant source of variance as shown in Table 1. The mean cluster score for students using Plan 3 was lower than the mean cluster scores for students in Plan 1 and Plan 2.

There appeared to be a general trend for students using Plan 3 to report less favorable attitudes than students using Plan 1 and Plan 2. For two of the objectives in Plan 3 the students completed all of the activities associated with each as in Plan 1. The other two objectives were handled as in Plan 2. Students completed activities associated with a single generalization within an objective and then reported what they had learned to the rest of the class. The change in structure of the learning center may have been confusing to the students, creating generally less positive attitudes.

Teacher attitudes were favorable toward the use of group learning centers as a teaching/learning strategy for use in mainstreamed classes. Teachers agreed that group learning centers facilitated instruction for mildly disabled students and nondisabled students working together within a common classroom.

Comments by teachers indicated that socialization among students increased through small group work. Good participation by all students was observed by teachers. All students including those with disabilities participated in group reports in Plan 2.

The teachers' responses indicated that they believed the use of group learning centers freed them to help students who needed help and encouraged peer tutoring among students working in the centers. Teachers agreed that the strategy was an effective way to provide hands-on activities in a nonlaboratory instructional area. Participating teachers indicated that they would use group learning centers again, especially if materials were available.

Implications

In conclusion, group learning centers were an effective teaching/learning strategy in mainstreamed classrooms. Cognitive growth occurred for both nondisabled and

mildly disabled students in all three plans. No significant differences in cognitive achievement were found between the plans.

Student attitudes toward the learning center strategy were generally positive in all plans. However, those who were assigned to Plan 2 expressed significantly more positive attitudes toward learning center activities and materials than those in Plans 1 and 3. The less favorable attitudes of the students in Plan 3 suggest that this plan needs further study. In all three plans the students responded favorably toward participating as a member of a group.

Participating teachers displayed positive attitudes toward the use of group learning centers. Specifically teachers expressed very favorable attitudes toward the socialization which occurred as students worked together as a group to accomplish a common goal.

Many times disabled students are physically integrated into mainstreamed classes but are socially isolated. Keogh and Levitt (1976) stressed that physical time in the classroom, or temporal integration, is not enough. Instructional and social integration are also essential components of mainstreaming. Group learning centers, as utilized in this study, can contribute to both the intellectual and social growth of students.

It is not to be implied that group learning centers should be used to the exclusion of other teaching/learning strategies in mainstreamed classrooms. Using the group learning center strategy only once, as an intervention, will not result in lasting social status gains for disabled students (Rucker and Vincenzo, 1970). Therefore, it is recommended that group learning centers be used intermittently throughout the year to reinforce the social status gains for disabled students.

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